



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/607,619	06/27/2003	Masaki Ota	5095-4065	7982
27123	7590	04/06/2006		
MORGAN & FINNEGAN, L.L.P. 3 WORLD FINANCIAL CENTER NEW YORK, NY 10281-2101			EXAMINER DWIVEDI, VIKANSHA S	
			ART UNIT	PAPER NUMBER
			3746	

DATE MAILED: 04/06/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/607,619	Applicant(s) OTA ET AL.	
	Examiner Vikansha S. Dwivedi	Art Unit 3746	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12 October 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-16 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>6/27/2003</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Priority

The priority claimed for the application has been acknowledged.

Information Disclosure Statement

Applicant Information Disclosure Statement submitted on 6/27/2003 is acknowledged. Since the submission complies with 37CFR 1.97 and 1.98 the references listed therein have been considered. An initialed and dated copy of Applicant's IDS form 1449 is attached to the instant Office action.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 1-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kayukawa et al. (U.S. Patent number 5,417,552) in view of E. W. Spannhake (U.S. Patent number 3,204,534).

Kayukawa teaches a piston type compressor (Shown in Figure 1) comprising: a housing (5) defining a suction pressure region, the housing including a cylinder block (6) which defines a plurality of cylinder bores (7) to form a compression chamber (45); a drive shaft (20) supported for rotation by the housing; a cam operatively connected to

Art Unit: 3746

the drive shaft; a piston (8) accommodated in each cylinder bore, the piston operatively connected to the cam so as to be reciprocated by converting the rotation of the drive shaft, the reciprocation of the piston varying a volume of the compression chamber; a refrigerant gas passage interconnecting the suction pressure region with at least one of the compression chambers; and a rotary valve (48) integrally formed with the drive shaft so as to synchronously rotate with the drive shaft, the rotary valve including a suction guiding hole which forms a part of the refrigerant gas passage, the suction guiding hole connecting each compression chamber by turns with the suction pressure region as the rotary valve is rotated, the suction guiding hole communicating with a plurality of the compression chambers at least at early and last stages in a suction process; wherein the suction guiding hole has a first end formed at a preceding side in a rotational direction of the rotary valve, the suction guiding hole also having a second end formed at a following side in the rotational direction of the rotary valve, the suction guiding hole further having a middle between the first end and the second end, the suction guiding hole further having a predetermined area per unit length in the rotational direction; wherein the suction guiding hole communicates with two of the compression chambers at least at the early and last stages (Shown in Figure 3); wherein the suction pressure region includes an introducing chamber and a suction chamber; wherein a single-head piston type compressor is adopted; wherein the cylinder block is made of metallic material of aluminum series, the rotary valve being made of one of metallic material of aluminum series, metallic material of iron series and resin.

Art Unit: 3746

Kayukawa does not teach that the predetermined area gradually increases from the first end to the middle and gradually decreases from the middle to the second end.

Piston type compressor wherein the rotary valve has a rotary axis for rotation, the suction guiding hole having a predetermined length in a direction of the rotary axis, the predetermined length gradually increasing from the preceding side to the middle and gradually decreasing from the middle to the following side; wherein the suction guiding hole has a substantially oval shape; wherein the suction guiding hole has a substantially rhombic shape. Spannhake provides teaching for a valve and piston assembly where the area of the valve the predetermined length gradually increasing from the preceding side to the middle and gradually decreasing from the middle to the following side and has a substantially rhombic shape (Figure 2 and 5, Spannhake provides teachings for diamond shape, a rhombus is a parallelogram with four equal sides and sometimes one with no right angles). Spannhake further teaches the oval (elliptical) shape (Column 7, lines 58-65). It would have been obvious to one of ordinary skill in the art to apply the teachings of Spannhake to Kayukawa to have a rotary valve with the claimed shapes that delivers fluid with a constant speed and it also smoothes out the pressure in the chambers.

Art Unit: 3746

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Vikansha S. Dwivedi whose telephone number is 571-272-7834. The examiner can normally be reached on M-F, 8-4.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Timothy S. Thorpe can be reached on 571-272-4444. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

VSD


TAE JUN KIM
PRIMARY EXAMINER